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(54) Improvements in or relating to
exhaust systems and/or boat hulls

(57) The exhaust from the motor of a boat enters a header chamber 7, which is connected, via a series of pipes 6, to a chamber 8 which is underneath a bottom hull member 1 and is consequently below the water line. The chamber 8 is open towards the stern of the boat. When the boat is moving forwardly, water flowing past the open mouth of the chamber 8 reduces the pressure in the chamber 8 by the venturi effect. The effect is that the back pressure felt by the motor is lessened. Furthermore, the gas layer beneath much of the hull can reduce the friction on the boat hull as it passes through the water. A valve 14 can be opened to allow the exhaust to escape above the waterline during the start up of the motor.

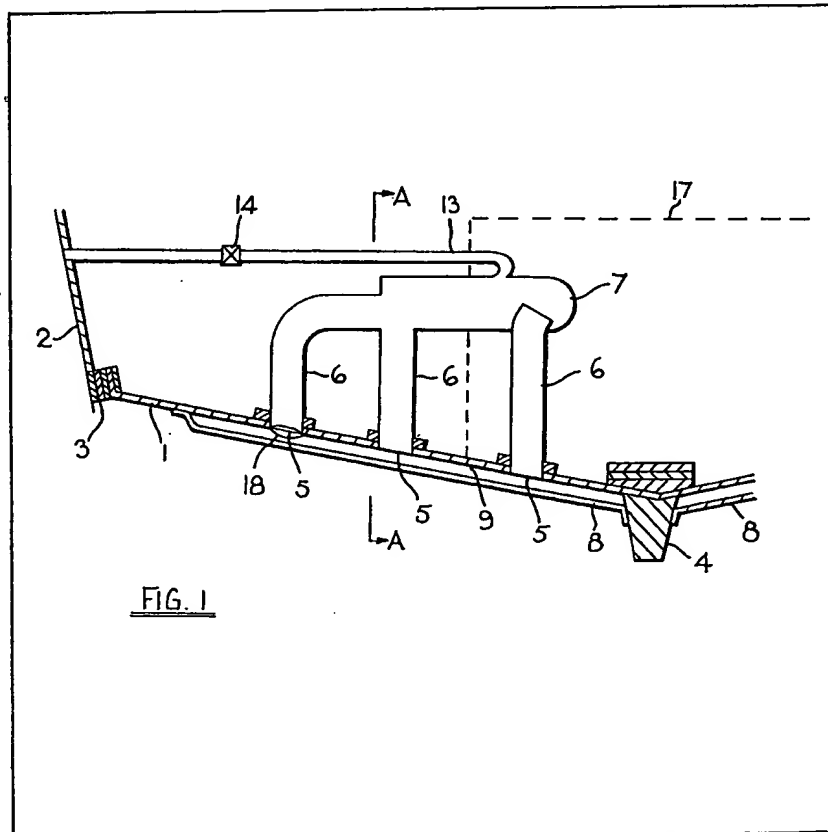


FIG. 1

The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

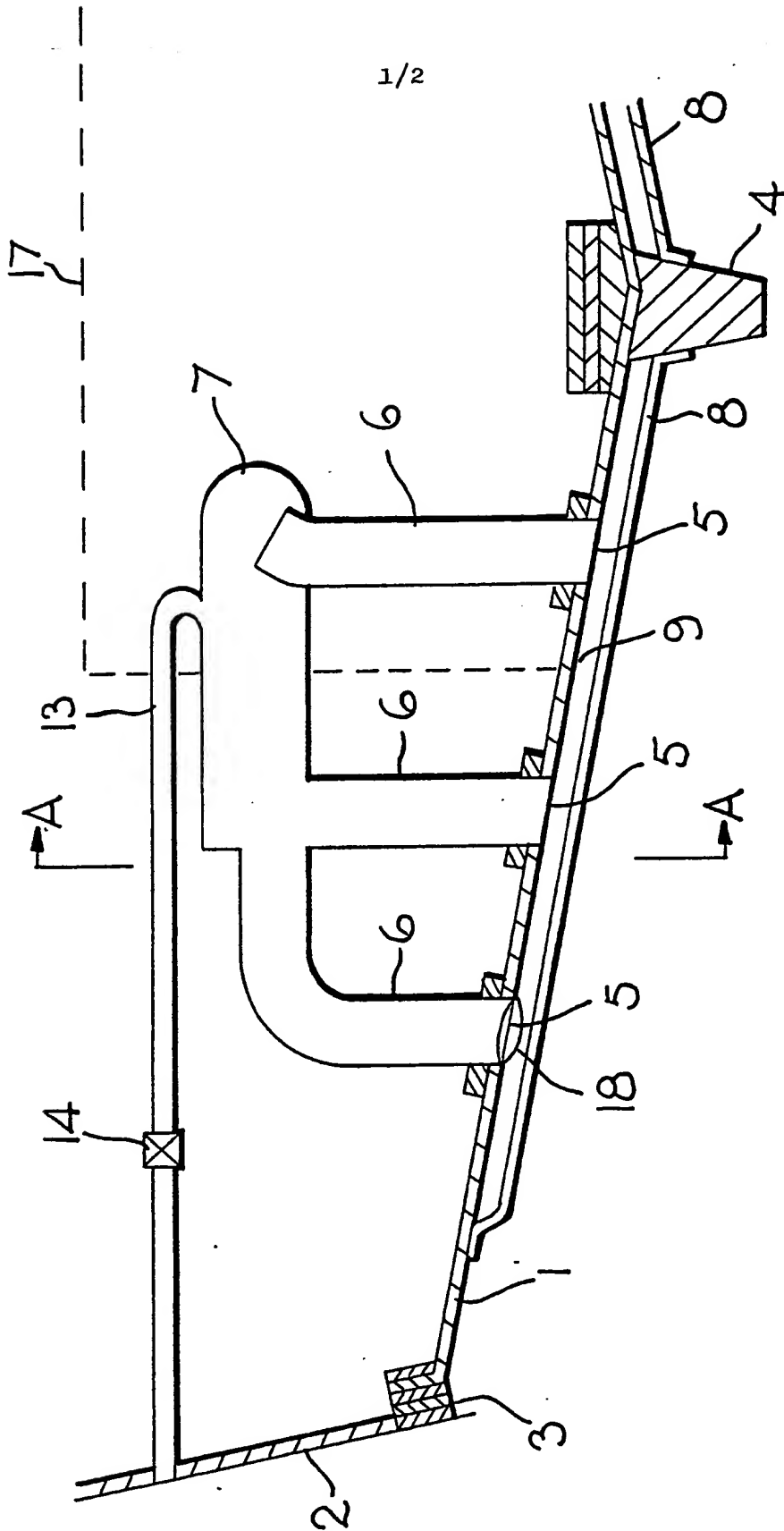


FIG. 1

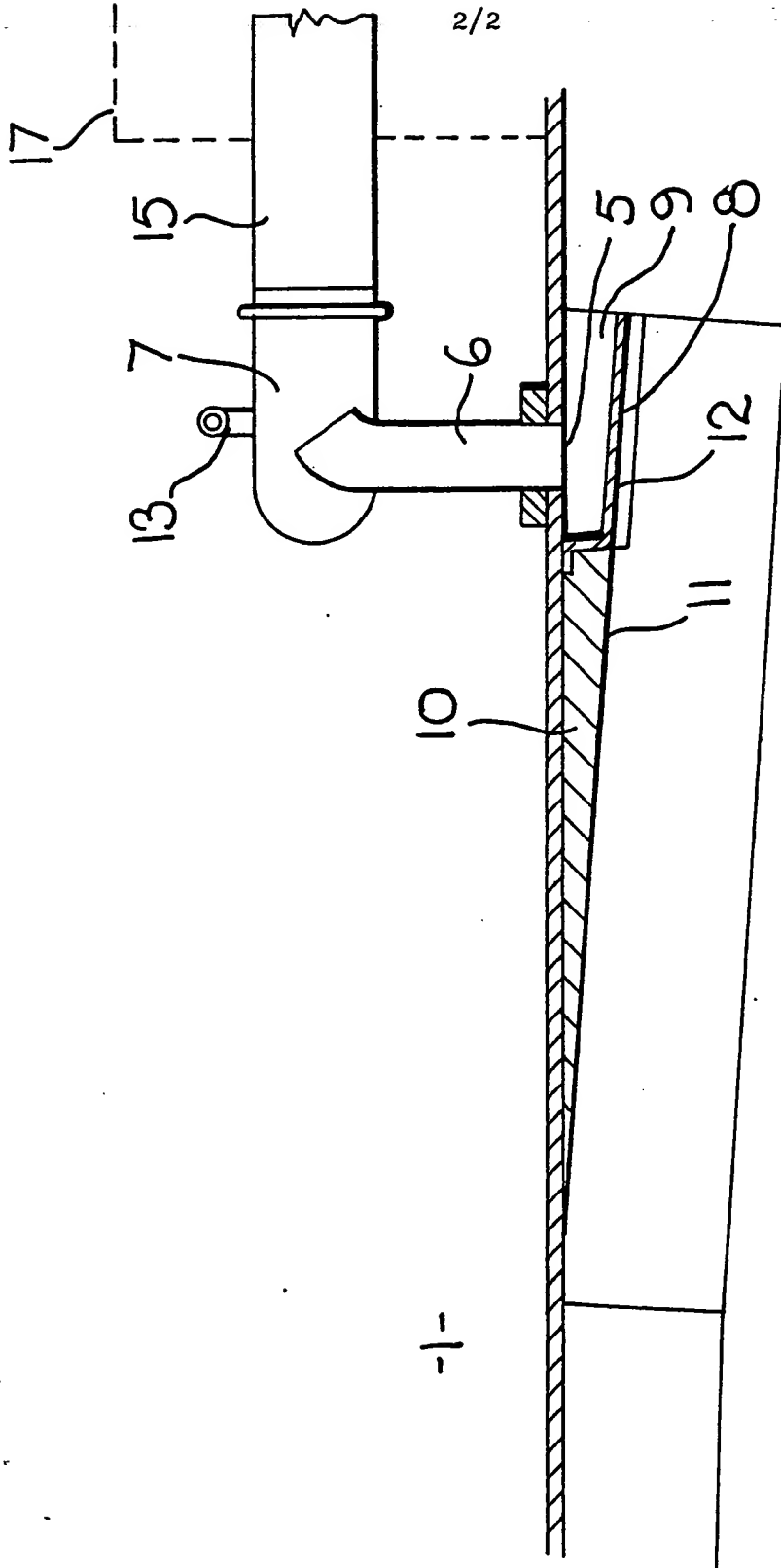


FIG. 2

SPECIFICATION

Improvements in or relating to exhaust systems and/or boat hulls

- 5 This invention relates to an exhaust system and/or a boat hull.
- It is an object of the present invention to provide an exhaust system and/or a boat hull which will at least provide the public with a useful choice.
- Accordingly, in one aspect the invention consists in an exhaust system for a boat or the like comprising one or more outlet exhaust pipes, the end of said pipes being positioned or positionable so as to extend to or through an aperture in part of the hull of a boat below the general water line thereof.
- In a further aspect the invention consists in a boat hull having a chamber or chambers on the under surface thereof below the general water line thereof, said chamber or chambers being fed through the hull of said boat by one or more exhaust pipes.
- To those skilled in the art to which this invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the scope of the invention as defined in the appended claims. The disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.
- One preferred form of the invention will now be described with reference to the accompanying drawings in which:-
- Figure 1* is a transverse, cross-sectional view of part of a boat hull and exhaust system according to the invention, and
- Figure 2* is a longitudinal cross-sectional on A-A in figure 1 of part of a boat hull and exhaust system according to the invention.
- In the invention a boat hull is provided which has a member 1 forming the bottom thereof and members 2 forming the side surface of the boat although other constructions are envisaged.
- If desired, a downturned part may be provided at the outer extremity of the undersurface 1. Thus an outer rib is provided along the side edge of the undersurface 1.
- In the construction described a keel 4 is provided but it will be apparent that the invention may be used for other configurations.
- One or more and preferably a plurality of apertures 5 are provided in the member 1 below the general water line of the boat in normal use. These apertures are fed by outlet exhaust pipes 6 which preferably extend from one or more, preferably two, common headers 7. Such exhaust pipes are preferably provided in equal numbers on each side of the central line of the boat. There may be any suitable number of apertures 5 for example six apertures 5 spaced equally each side of the keel 4.
- In the preferred form of the invention a chamber is formed below the member 1 and preferably a chamber 8 is provided each side of the keel 4 or centre line of the boat, the chamber 8 having a mouth 9 which is rearward facing in use.
- The undersurface 1 of the boat also preferably has

a wedge 10 provided therein so that the undersurface 11 of the wedge and the undersurface 12 of the chamber 7 lie in substantially the same plane. That is to say, a rearward facing step is provided in the lower surface of the hull by the mouth 9 of the chamber 8.

- A vent pipe 13 preferably extends from the header chamber 7 to a point exterior of the boat hull preferably above the water line. The vent pipe 13 is desirably provided with a valve 14 operable from the control panel of the boat.

An inlet 15 to the header chamber 6 is also provided which leads from the motor (shown pecked and diagrammatically at 17) which is to be used to drive the boat.

The use of the invention is as follows.

In use the exhaust gases from the powering motor 17 pass to the header 7 and then pass downwardly through the exhaust pipes 6 into the chamber 8 there to be dispelled beneath the boat.

During the period that the boat is moving water flow rearwardly along the underside of the boat will cause a venturi effect to occur at the mouth 9, thus sucking or drawing the exhaust gases down the pipes 6 to chamber 8.

The dimensions of the pipes 6, chamber 8 and the other parts will depend upon the volume of the output gases and also how deep in the water the exhaust ports are to be positioned. The aperture size of the outlet pipes and outlets 5 will need to be larger where the outlets are deeper and also where the throughput of gases is larger. The chambers 8 desirably extend over a substantial width of the below water line length of the boat and it is also envisaged that the aperture size of, for example, the pipes 6 or the outlets 5 could be made variable, for example, by providing flaps 18 (shown in the left hand outlet 5 in figure 1) which can be used to partly cover the aperture 4 and which may be controlled from any control panel of the boat.

During the initial start-up of the boat before it is moving the exhaust gases will be passed through the pipe 13, the valve 14 being opened for this purpose, to the exterior of the boat but as the venturi effect begins to occur at the mouth 9 of chamber 8, more gases will pass through the outlet ports 6 and some air may be drawn inwardly through the pipe 9 to the header chamber 6. Such inward drawing of air may be prevented by closing valve 14. This will also aid the directing of gases to pipes 6 and can also be used where there is risk of water entering header 7 through pipe 13.

Thus it can be seen that an exhaust system and/or a boat hull are provided which at least in the preferred form of the invention have the following advantages:-

1. The exhaust system reduces the back pressure felt by the motor. This is desirable as control of back pressure can be critical with motors commonly in use today.
2. As a substantial proportion of the exhaust gases are dispelled beneath the boat the aesthetic appeal of the boat is enhanced as there is no substantial blackening or darkening around the exhaust ports of the boat.

3. The presence of an air layer below a substantial part of the hull of a boat has some effect in reducing friction between the boat hull and the water through which it is passing.

5

CLAIMS

1. An exhaust system for a boat or the like comprising one or more outlet exhaust pipes, the
10 end of said pipes being positioned or positionable so as to extend to or through an aperture in part of the hull of a boat below the general water line thereof.

2. An exhaust system as claimed in claim 1 wherein a plurality of outlets are provided, said
15 outlets feeding a common chamber or chambers positioned adjacent the hull of said boat below the general water line thereof, said chamber or chambers having a rearward facing outlet.

3. An exhaust system as claimed in claim 2
20 wherein one chamber is provided each side of the keel of the boat.

4. An exhaust system as claimed in either claim 2 or claim 3 wherein said plurality of outlets are fed from one or more headers.

5. An exhaust system as claimed in claim 4
25 wherein a vent extends from said header to the hull of said boat above the general water line thereof.

6. An exhaust system as claimed in claim 5 wherein a control valve able to open or close said
30 vent is provided within said vent.

7. An exhaust system substantially as herein described with reference to the accompanying drawings.

8. A boat hull having a chamber or chambers on
35 the under surface thereof below the general water line thereof, said chamber or chambers being fed through the hull of said boat by one or more exhaust pipes.

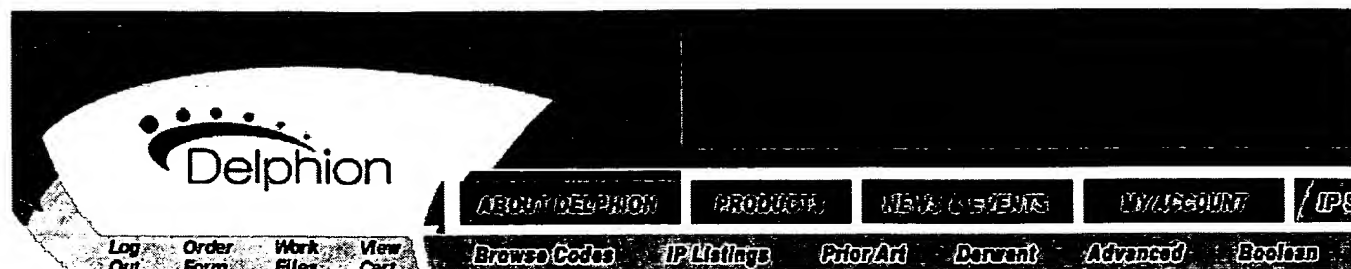
9. A boat hull as claimed in claim 8 wherein a
40 pair of chambers is provided positioned one each side of the keel or centre line of said boat hull.

10. A boat hull as claimed in either claim 8 or claim 9 wherein the under surface of said boat hull has a step therein, said chamber or chambers being
45 positioned in the rebate formed by said step and the opening of said chamber or chambers being rearward facing and the rebate being rearward facing.

11. A boat hull as claimed in claim 10 wherein the bottom surface of the or each chamber lies in
50 substantially the same plane as the bottom surface of the outermost part of said step in said boat hull.

12. A boat hull substantially as herein described with reference to the accompanying drawings.

13. Any novel feature or combination of features
55 described herein.



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INPADOC Record

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